

August 2014



CONSERVING WILDLIFE ~ SERVING PEOPLE

Wyoming State Wildlife Action Plan Newsletter

New Project Focuses on Wyoming's Grassland Bird Species of Greatest Conservation Need

Wyoming grasslands are home to 35 species of birds. Currently, 12 species of nongame grassland birds in Wyoming are listed as Species of Greatest Conservation Need (SGCN). These include bobolink, burrowing owl, chestnut-collared longspur, dickcissel, ferruginous hawk, grasshopper sparrow, lark bunting, long-billed curlew, McCown's longspur, mountain plover, short-eared owl, and upland sandpiper. Across their range, grassland birds have declined more dramatically, more consistently, and over a more geographically widespread area than any other group of birds in North America. Their habitat is threatened from cultivation, fragmentation, industriali-

zation, the spread of invasive plants, urban sprawl, and the loss of natural disturbances such as fire.

Personnel from many agencies and organizations are currently involved in monitoring grassland birds: Audubon Rockies, Bureau of Land Management, National Park Service, Rocky Mountain Bird Observatory, U.S. Forest Service, Wyoming Game and Fish Department, and Wyoming Natural Diversity Database. Volunteers in Wyoming have also been very instrumental in efforts to monitor these species. Despite these actions, the burrowing owl, long-billed curlew, mountain plover, and upland sandpiper are not monitored adequately using existing methods; instead, they require spe-



Upland Sandpiper (*Bartramia longicauda*)

Photograph by Wyoming Game and Fish Department

Inside this issue:

Wyoming's Grassland Bird Monitoring	1
Native Mussel Surveys in Wyoming	3

Wyoming's Grassland Birds (continued)

cies-specific techniques to determine distribution, estimate occupancy, and evaluate population trends. Thanks to funding provided by the Wyoming Governor's Endangered Species Account, Wyoming Game and Fish Department Nongame Program personnel developed permanent road-based survey routes in 2013 for the mountain plover and the upland sandpiper across their range in the state. Permanent survey routes are being developed for the burrowing owl and long-billed curlew in 2014 with the remainder of the funding. Once all routes have been established, regional Wyoming Game and Fish Department personnel are planned to be utilized in conducting annual surveys for these grassland SGCN.

The range-wide mountain plover population is estimated at 24,000 to 192,200 birds, depending on the source of the estimate. In Wyoming, the current minimum population estimate is 3,393 individuals. Mountain plovers can be difficult to detect using more general approaches, such as the standard Breeding Bird Survey (BBS). Plovers are often missed on BBS routes because they have a very soft call that may not be heard by observers, they do not vocalize repeatedly to advertise territories or attract mates like songbirds do, and they may remain hidden unless an observer forces a reaction by stepping out of a vehicle. Mountain plovers are unaffected by vehicle traffic, but are intolerant of people traveling on foot and may conceal their presence without being detected. Using preliminary surveys and habitat assessments, permanent survey routes were located in breeding concentration areas around the Big Horn Basin, Great Divide Basin, Mexican Flats, Shirley Basin, and Laramie Plains. In 2013, additional routes were established near Wamsutter, Moneta, Lysite, Arminto, Medicine Bow, and Thunder Basin National Grasslands.

Upland sandpipers declined sharply in the early 19th century due to unsustainable sport and market hunting. Once upland sandpipers became protected, they rebounded and have become more common in mid-

western grasslands. Upland sandpipers are considered uncommon and on the edge of their breeding range in Wyoming. The BBS trend analyses suggest that the upland sandpiper breeding population in Wyoming has increased from 2002-2011. However, upland sandpipers have very large breeding territories, estimated between 50-200 acres. This can distort population estimates based on BBS results, so a species-specific, long-term population monitoring program for the upland sandpiper was needed. Permanent survey routes were established within the upland sandpiper's breeding range in eastern Wyoming near Hulett, Newcastle, Gillette, Glendo, Lusk, Moorcroft, Sheridan, and Torrington. The long-term data collected from these routes will be more representative of upland sandpiper distribution, occupancy, and abundance throughout their breeding range in Wyoming, and will enable the determination of population trends over time.

The long-billed curlew was historically common in Wyoming, but is now classified as uncommon by the Wyoming Game and Fish Department. Long-billed curlew populations declined greatly due to market hunting practices of the 19th century; now their greatest threat is habitat loss. According to



Mountain Plover (*Charadrius montanus*)

Photograph by Wyoming Game and Fish Department

Wyoming's Grassland Bird (continued)

BBS results, the current long-billed curlew population in Wyoming is estimated to be 1,000 individuals. However, the timing of the BBS survey (the month of June) is not conducive to detecting curlews, which nest earlier in the year, and this species is not well detected using the BBS method. Therefore, permanent monitoring programs are being established using randomly selected roadside survey routes to determine distribution, estimate occupancy and abundance, and evaluate population trends of the long-billed curlew in eastern Wyoming. Surveys will follow similar methods used to detect curlews in other parts of the United States and Canada.

Burrowing owls were once very common across much of the United States, but populations have declined range wide due to habitat loss and a decrease in prairie dog populations. Several recent studies found that 66-86% of burrowing owls were found in habitat with existing or recent colonies of prairie dogs, which provide shelter, nest sites, and brood-rearing habitat. Burrowing owls also use numerous satellite burrows to cache food, as perch

sites, and for additional cover. Although burrowing owls are known to nest in the burrows of several animal species, they seem to show an affinity for prairie dog colonies because of the density of burrows across the landscape. Burrowing owls also appear to have a beneficial relationship with grazers such as domestic cattle and sheep, bison, and horses. Grazers keep the vegetation height under eight centimeters, which increases the visibility of the surrounding area, and they provide a source of dried manure the owls use to line their nest burrows. To date, little is known about the abundance of burrowing owls across Wyoming, existing monitoring programs do not adequately track this species, and a statewide monitoring program has not been feasible. Project funding will allow implementation of a standardized call-broadcast survey protocol that is specific to burrowing owls, which will enable achieving a 95% detection rate, and estimate occupancy and abundance across their range in eastern Wyoming.

Story by Jeff Coyle and Andrea Orabona, Wyoming Game and Fish Department Nongame Program

Study Increases the Understanding of Mussel Diversity within Wyoming

North America hosts the world's highest diversity of freshwater mussels. Wyoming currently has seven known native mussel species within two families: *Unionidae* and *Margaritiferidae*. The western drainages of Wyoming are home to two species of native freshwater mussels: the California floater (CFM, *Unionidae: Anodonta californiensis*) and the western pearlshell (WPM, *Margaritiferidae: Margaritifera falcata*). Both CFM and WPM have a conservation rank of Native Species Status Unknown (NSSU) in Wyoming's 2010 State Wildlife Action Plan (SWAP). The NSSU ranking indicates that there is currently insufficient information

about the species in Wyoming to determine its conservation status.

Unregulated exploitation (e.g. harvesting for button production and the pearl industry), loss of obligate host fishes, habitat degradation, and a lack of management during the last century has negatively impacted mussel populations. Currently, in North America, more than 70% of mussel species have an imperiled conservation status. The headwater nature of many drainages in Wyoming limits the amount of suitable habitat and increases the risk that native mussel species may go extinct.

Mussel Surveys (continued)



Surveyors Snorkeling in the Snake River

Photograph by Wyoming Game and Fish Department

Native mussels co-evolved with fish hosts that increase their chances of upstream migration. Mussel reproduction includes an encysted larval stage on a host fish, in which larval mussels (glochidia) attach themselves to a host fish's gills and fins. These mussel-bearing fish can travel extensively within rivers and among watersheds, and assist with dispersing mussels to suitable habitat. In the case of the WPM, it can use a multitude of fish species for hosts, most being trout and salmon, but speckled dace, Tahoe sucker, and Lahontan redbreast have also been known to be hosts. The CFM has fewer known hosts including mosquitofish, speckled dace, margined sculpin, and longnose dace.

The CFM is a relatively short-lived mussel species, only living 10-15 years and reaching maturity at age four or five. Its native range originally included much of California north to British Columbia, Canada; east to western Wyoming and eastern Arizona; and south to Chihuahua, Mexico. CFM prefer fine substrate habitat (i.e., mud and sand) in rivers, reservoirs, and lakes. Irrigation diversions that cause water level fluctuations and water impoundment dams that act as migration barriers for host fish have

contributed to major population declines throughout its native range.

Within the Pacific Northwest drainages, the WPM is the most common species of native freshwater mussel. Its native range includes Alaska, California, Idaho, Montana, Nevada, Oregon, Washington, Wyoming, and British Columbia. The WPM is one of the longest-lived invertebrates known, with a life span that can exceed 100 years, but typically averages 60 to 70 years. The species reaches maturity at 9 to 12 years. The WPM is one of seven species of native mussels in North America known to be predominantly hermaphroditic (has both male and female reproductive organs) which allows for reproduction when few individuals are present, such as in a headwater stream. The WPM prefers clean, cold streams with stable sand, gravel, and cobble bottoms and are often found in the slack water along river banks. As with the CFM, impoundments have caused major declines in WPM throughout its range by preventing host fish movement and regulating stream flows.

Prior to 2011, little was known about native mussels



Western Pearlshell Mussels (*Margaritifera falcate*)

Photograph by Wyoming Game and Fish Department

Mussel Surveys (continued)

in Wyoming. A study in western Wyoming was established with the objectives of identifying the distributions, habitat associations, and core populations of native mussels in the Bear and Snake River drainages; proposing NSS rankings, identifying potential limiting factors, suggesting potential management actions for native mussels in Wyoming; and completing a comprehensive collection of native mussel voucher specimens at the University of Colorado Museum of Natural History.

Eleven sites were sampled in the Bear River drainage in southwest Wyoming and 12 sites in the Snake River drainage in northwest Wyoming. Streams sampled in the Bear River drainage included the Smiths Fork River, Bear River, Yellow Creek, Sulphur Creek, LaChapelle Creek, and Mill Creek. Snake River drainage sample sites included Fall Creek, North Fork Fisherman Creek, Flat Creek, Spread Creek, Buffalo Fork River, Lizard Creek, Polecat Creek, Snake River, Lake Creek, and Bearpaw Creek.

Sampling methods included snorkeling, glass bottomed view buckets, polarized sunglasses, and/or hand searching river bottoms to feel for mussels. Stream banks were also searched for evidence of shells. Commonly, native mussel shells are deposited on banks from high water flows and/or predators.

Habitat information was collected at each survey site including stream depth and width. The stream bottom was also characterized into categories such as fine, (silt, clay, and muck), sand, fine gravel, course gravel, cobble, boulder, hardpan, bedrock, wood, and other. Between transects, the dominant habitat type was identified as a pool, riffle, or run. Water quality records were also obtained from the Wyoming Department of Environmental Quality. Live mussels were measured to obtain information about population age structure. If there was a large diversity of sizes, especially with small individuals



California floater (*Anodonta californiensis*)

Photograph by Wyoming Game and Fish Department

present, it confirmed that recruitment was occurring. When encountered, empty shells of preferred specimens were collected and added to a collection at the University of Colorado Museum of Natural History.

A total of 23 sites were surveyed for native mussels yielding 3,723 WPM and 13 CFM at 11 sites in the Bear River and Snake River drainages. Of the sites yielding mussels, five were within the Bear River drainage and six were within the Snake River drainage. Mussels were not found at six sites in each of the drainages. The Snake River drainage is host to a single species, WPM, while the Bear River had both CFM and WPM present. Juvenile recruitment of WPM was evident, while only larger, older CFM were found during surveys.

Native freshwater mussels have unique microhabitats that are both species-specific and population-specific. Due to these microhabitats, detecting a relationship between habitat and native mussels proved to be difficult at the scale of this study. In future native mussel surveys, survey techniques could include plotting stream bottoms to potentially

Mussel Surveys (continued)

determine microhabitat correlations.

Given the low numbers of CFM found in this survey and considering the impacts of water development (e.g., stream dewatering and the presence of barriers to fish movement); the CFM may be more imperiled in Wyoming than previously thought. Three of 11 sites yielded a total of 13 CFM. Using the Wyoming Game and Fish Department's SWAP sensitive species ranking process, a conservation status of NSS2, the Department's second highest, is recommended. In contrast, WPM populations appear stable, and in future years, continued sampling may determine if the populations are expanding. Using this information, a rank of NSS5 is recommended. Under this ranking, if adopted by the Wyoming Game and Fish Commission, the WPM would no longer warrant SGCN status in Wyoming.

Mussels are great indicators of overall stream health and are an important component of natural diversity in aquatic systems. The Wyoming Game and Fish Department plans to continue to build its knowledge of native mussels within the state.



Western Pearlshell Mussel from the Snake River

Photograph by Wyoming Game and Fish Department

Story by Philip Mathias and Gordon Edwards, Wyoming Game and Fish Department Nongame Program



WYOMING GAME & FISH DEPARTMENT

Conserving Wildlife—Serving People

We're on the web:

<http://wgfd.wyo.gov/web2011/wildlife-1000407.aspx>

Questions or Comments?

Questions or comments about the Wyoming State Wildlife Action Plan or this newsletter can be forwarded to:

Glenn Pauley
Planning Coordinator
Wyoming Game and Fish Department
5400 Bishop Boulevard
Cheyenne, WY 82006
Phone: (307) 777-4637